

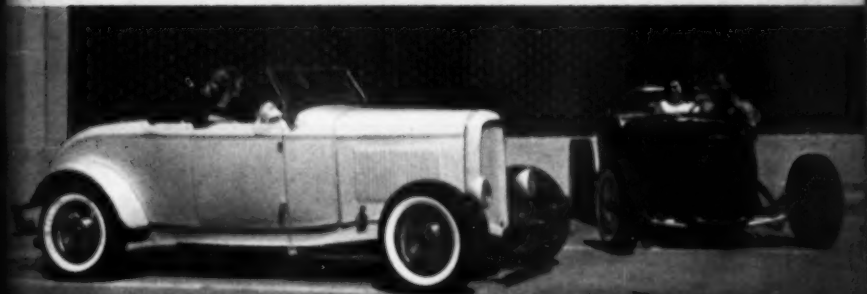
ROD & *Custom*

Design
Contest
Winners
page 38

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extensive
report on
**QUAD
HEADLIGHTS**

CUSTOMS PICTORIAL the pre-war cars



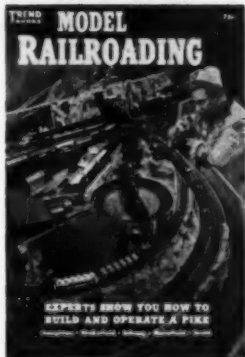
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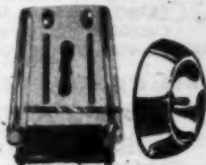
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FEATURES



Few styling gimmicks have aroused as much interest as quad headlights. Are they legal? How can they be installed?

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the starting line

THE GREAT automotive year of 1957 will just be getting into high gear by the time you read this, so let's take a few moments and see what we can come up with in the way of predictions. And a year from now we'll glance back at 'em and see how accurate we were.

1957 should see much more activity in the customizing field than '56, for we've got new cars and new trends to add (or take away) from them. 1956 saw a slowdown in this direction for the cars given us a year ago were rehashed '55's and ideas had been used up or worn out the year before. But now we've got new cars with more fins, more headlights and more emphasis on length and width than ever before and we're going to make the most of it. Older cars will receive fins where no fins existed before, and the later finned models will go under the torch to make their appendages larger and more pronounced.

To this same end we'll also see quad headlights adapted to older cars, and enthusiasts will be stuffing them into '57 fenders where the manufacturers have them planned for '58 without extensive die changing (pages 14-17 will enlighten you).

For the hot rodders among you, let us go on record as predicting that next year's Bonneville meet will see at least 12 records broken, each by an average of 8 miles an hour; and that the unlimited Streamliner two-way average will climb from its present 255 to 263 — also an 8 mph increase. These assumptions are based on past performances; '54 saw 14 records fall, '55 was the year that 15 were broken and '56 held the average up with 15 also with average speed increases in the 7-9 mph bracket. We look for slightly fewer top times to topple for several reasons; because fewer competitors will participate than in the past, and because the records are almost sky-high now and to push existing engines and chassis beyond these marks will take superhuman efforts.

Will '57 see quarter mile speeds creep over the 160 mph mark? Don't think so, except perhaps for a lone exception, since emphasis for '57 will be on reducing elapsed times, more so than ever before. That is what counts during the runoffs — get there first, not necessarily the fastest, and the battle is won. So we're looking for a 9 secs. e.t. with many more cars under 10 secs.

Auto shows will be fewer in number than during recent years, but those that do open their doors will have more to offer the paying public. Too many eager promoters, looking for a fast buck, will have realized that they can't squeeze that buck out of an auto enthusiast without something really big to offer. But, those that survive will be produced by enthusiasts for enthusiasts and that's an unbeatable combination for a successful show.

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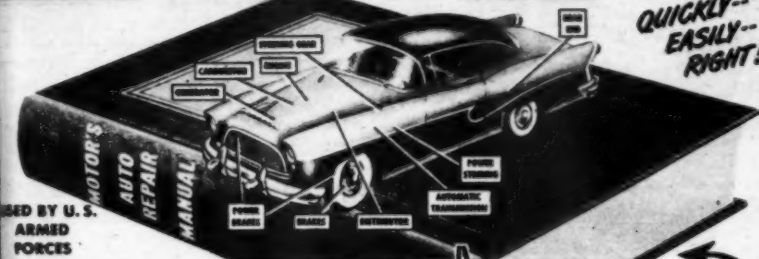
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LETTERS

TO THE
EDITORS

CONFUSED

After reading the September issue, I am slightly confused. Author Harry Chamberlain's article on wheel alignment stated that it is improper to switch the steering arms of an early Ford front end because of the effect this would have on steering. Yet, on the cover of the same issue there is a beautiful picture of *The Dragster* with the steering arms apparently switched. Since that car has been called the ultimate in dragsters, how come such a switch was carried out? Tom Schrum Phoenix, Arizona

● Roughly speaking, lines drawn through both the center of the spindles and the center points of the steering arm-tie rod pivots should converge near the end of the car. If the steering arms were reversed but otherwise were unaltered, such lines would diverge. However, if after the arms were reversed they were bent so the above rule was retained, the car would steer as it had before.



MODEL CARS

I enjoyed your article on model cars in the Nov. issue, but think I can add to your information since I've been at the game for several years. Razor blades and Jeweler's saws may be alright for some types of work, but here's a tool I dreamed up and found works very well:

For cutting large panels of plastic (as in sectioning), I fitted an X-Acto knife blade to a woodburning tool. When plugged in, the knife blade gets hot and cuts the plastic like melted butter. No distortion due to heat, either, or wasted material since the knife parts the material instead of sawing it. Doug Miller Lynwood, Calif.

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WHO'S COPYING WHOM?

I think that the Ford Motor Company must look to R & C for ideas in designing their cars. The rear end of your "Year's Best Custom" (Oct. '56) looks quite like the '57 Ford. And now they're offering the Mark II as a convertible, something suggested back in R & C for December '55. Honestly, now; who's copying whom?
Jim Fell
Cleveland, Ohio



● We'd feel proud if what you imply were true, but as far as Ford's fins go, they were designed several years ago. Furthermore, prototype models were on the test track before Metz's Buick was finished. Just a coincidence, nothing more. As for the Mark II, however, dig up a copy of last month's issue.

THE TRUCK

Like many other readers, I assume, I've been waiting to see your customized pickup truck. I don't mean in the magazine, but in the flesh. When are you going to have it finished, and when and where will it be displayed?
John Robinson Indianapolis, Indiana



● We realize we've put off showing the completed truck, but it's only because all you readers have been requesting more modifications than we've had time to perform. As of this writing, the metal work has just been completed! (Though the metalworking how-to-dos will follow for several issues). Yet to come are upholstery and painting —
(continued on p. 13)

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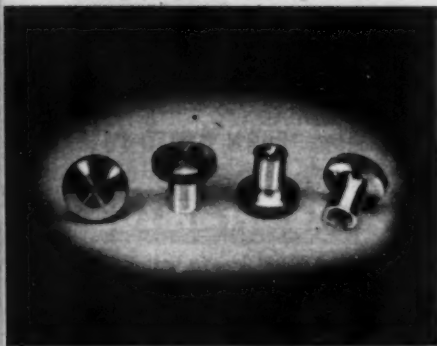
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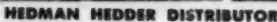
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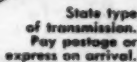


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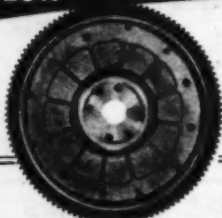
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MORE LETTERS

(continued from p. 9)

that's all. Several local shows in this immediate area have requested its appearance but these will be concluded before this issue is released. There's a chance it might be in Fort Wayne, Indiana, in the middle of February; but the first National showing is set for Hartford, Connecticut, between February 20th and 24th. See page 63.

WE DID IT AGAIN

I've held off subscribing to R & C because the types of cars I'm interested in don't always appear in your issues. But, herewith my three bucks for your December issue sold me. Egad! Customized versions of the '57 cars before your competition even presents them in stock form. You're fabulous! W. C. Erickson Ft. Smith, Arkansas
● *We're blushing. And to follow suit, dig the Ranchero on page 32.*

MODIFIED PONTIAC

We get your magazines a little later over here in Korea, but still think it's the greatest.

Last October you ran a letter from Marv Danielson of Salt Lake City in reference to his Pontiac 6—and my Dad once had the same trouble with me.

Rather than go to the bent-eight engines for hopping up, I stuck with a '47 Pontiac 6 and gave her a once over that later could leave Fords and Mercs standing at the stop light.

First I milled the head .070", installed a Carpenter cam, larger valves and gave it a port and relieve job. I made a log-type manifold that mounted three 97's and a header with two 3" collector tubes. Then I bored it .080" over and fitted Silvolite pistons. With a 4.47 rear end and 7.50 x 16 tires aft, it sure surprised many a warmed over Ford product—especially when I turned 87 in the quarter mile.

Monty Pierce

Korea

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rod and custom
COVERage

Photographer Colin Creitz catches George Barris in the act. Colin's 4 x 5 graphic, loaded with Anscochrome, records George as he rushes the R & C pickup to completion by giving it quad lights - The Look of '57. The most conclusive article to date on the 4-light system follows on the next 11 pages. For notification of the truck's first public appearance, please turn back to page 63.

The Lights of '57

AN EXTENSIVE REPORT ON QUAD HEADLIGHTS

Which
states
question
their
usage?

WILL THEY EVER
LEAVE THEM?

Which cars
will have them
next year without
making extensive
fender changes?

Can they be adapted to an older car?

Are they
entirely
legal?

Will the
customizers
follow the
trend?

Cadillac pioneered them on a "dream car",
but none of the GM line has them. Why?

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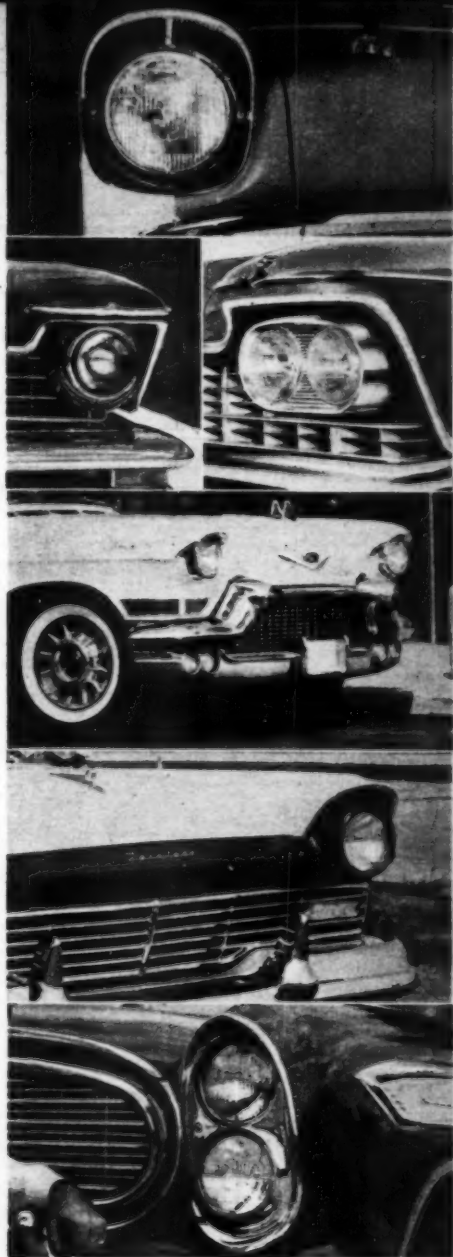
Chevrolet. GM has come up with an interesting gimmick here in having a screened duct above lights to admit interior air. Don't look for quads in 1958 unless Chevy comes up with a completely new body—which it undoubtedly will. Little chance of adding custom quads since fender width will not permit it.

Imperial. One of the two Chrysler cars offering quads as an option, the Imperial's double lens should meet popularity with the customers. The smaller lenses and housing which contains them could be added to fenders of good many older automobiles quite easily.

Adillac. Though this GM division boasted quad lights on its dream cars several years ago, this production line of cars lacks the feature. Adaption of quad lights to this body new for '57) would be an expensive proposition since new fender dies would be needed.

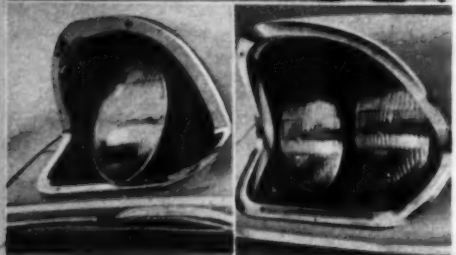
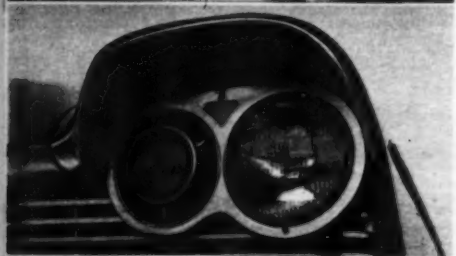
ord. It is interesting to note that not only are the headlight doors removable on the Ford, but the inner housing is a separate item, too. Removal of these leaves a gap large enough to admit quads. These were intended as a styling pitch for '58, but someone decided to advance the date and make them optional for sometime later on in 1957.

Nash. The Nash's use of quads provides the customizers with an interesting housing which could be worked into many other cars. However, this might mean narrowing of the grille on some models detracting from the desirable "wider" look. Modifications on some cars would be an extensive job, easier on others.



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Legal?

CUSTOM



Dodge. Another Chrysler product offering a wide enough fender to permit quad usage without fender-die changing. There is room here for two of the 5 1/2" light units without expensive customizing, is probably on tap for the models to be produced for next year. The customizers should beat 'em to the draw.

Lincoln. Owners of this Ford line might as well leave well enough alone, though lamp sizes vary. Like the Nash arrangement, the entire Lincoln housing could be worked into nearly any other car where adequate space permitted. Don't look for much change in '58.

Oldsmobile. As on the Chevy, Olds' existing fender dies would have to be ash-canned before the quads could be worked in. And grille and hood designs would have to be altered, too. The quad arrangement might have to be sidetracked here before another body shell is introduced — which isn't likely for next year.

Plymouth. A natural for quad lights in '58. A new panel of stainless steel or chromed metal could easily be fabricated to retain quads since fender opening is large enough to permit it. Highly possible factory will make this change next year, customizers should hop to it and beat them to the punch on this car.

Chrysler. The quad system offered by Chrysler as an option could be worked into an older car if fender width permitted it. As far as can be determined at this writing, the units will fit right into the DeSoto simply by switching parts. Chances are the conventional single lights won't even be an option for next year.

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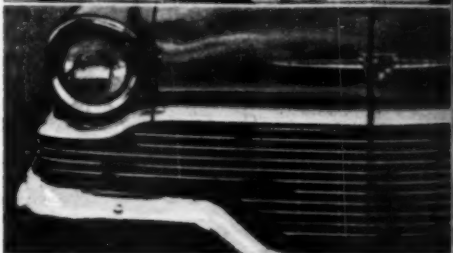
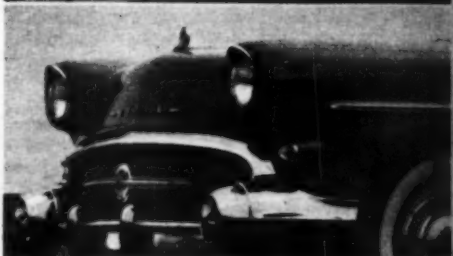
Mercury. It didn't look to me as though quads had a chance here, but at presstime they were announced as an option. Quad housing fits into fender indeed. Units can easily be added to earlier Mercurys with single units, or they may be worked into front end of older cars with a sufficient amount of work. Quads might be standard equipment for '58.

DeSoto. Another one just waiting for public reaction before quad lights are adopted. If system is incorporated in '58, new fender dies would not be necessary. Units like the line is ready for it. It could be that the Chrysler optional units will fit right in by swapping parts.

Buick. This is one of the remaining two cars shown to still use a conventional headlight rim as such. As on Olds and Chevy, there doesn't appear to be much hope for quads before introduction of an entire new body shell—at least new fenders, hood and a grille. Don't look for quads here for next year's models.

Pontiac. Again, here is the conventional headlight rim. No chance here for GM to moderately alter existing fender, hood and grille dies to permit installation of the quads for either side-by-side or over-and-under arrangement. But '58 promises new body and it is possible the line might adopt the system then.

Hudson, Studebaker, Packard, Thunderbird, Rambler, Continental and Corvette. None of these 7 seem to be readying for quads without entire sheet metal or plastic change. Even the customizers are up against it for none of them offer remote possibilities of adding quads without severe restyling.





THE QUAD STORY



AS THE RUMORS have it, quad headlights are illegal in some states, frowned on in others. And it is said that the auto manufacturers are currently putting the pressure on to have the laws changed to suit themselves. Actually, this is about as far from the truth as it could be, but a closer look is warranted in order to see how individual state's outmoded statutes are updated to correspond with the Uniform Vehicle Code.

The Automobile Manufacturers Association generally acts as go-between when state and governmental policies hinder the automobile manufacturers. As samples of what is meant by policies are such things as license plate size and location, height above roadway of head and taillights, etc. All of these things, and a good many more, are governed by law in many states and are a concern of both engineers and stylists who must know where to place such items in order for that car to be entirely legal. It is the AMA's job to keep track of these laws and statutes and to see to it that the manufacturers are aware of changes.

Quad lights are in this category.

In actuality, the thing goes back to the days when sealed beam lights were made mandatory as new equipment on cars. Some accessory manufacturers were selling driving or guide lights that, when improperly mounted, interfered with the efficiency of seal beams. To prevent the hazard of blinded drivers faced with eye-dazzling lights, some states included in their own vehicle code a statute which read more or less like this: "...and no vehicle shall be equipped with more than a

single pair of headlamps". This was also intended to outlaw cowl-mounted spotlights which, in the hands of a "cruiser" were used to "cut down" with oncoming drivers who failed to use their high-beams when approaching. And most of these statutes are strictly enforced to this day.

On August 31st, 1958, the AMA met in Winnipeg, Manitoba, Canada, and the quad system was approved. At the same time the Uniform Vehicle Code was modified so the quad setup could be legitimately incorporated into a car's styling.

Originally, some 22 states had statutes which either specifically said 4 headlights were illegal, or had statutes worded so they could be interpreted to that effect. As of now, 11 states are still acting under the original statutes, the balance already having modified their laws. The states still not following suit have not done so merely because their legislative bodies have not convened. All 11 promise to comply within the first months of '59.

Those states which, at this writing, have not had their statutes re-worded or modified so as to include the legal use of quad lights are: Alabama, Arkansas, California, Maine, Minnesota, North Carolina, North Dakota, Oregon, South Dakota, Tennessee and Wisconsin.

It should be stressed again that these states are not holding out against the wishes of the manufacturers or any representative body for them, rather only time is required before existing statutes can be modified so that quad lights are as fully legitimate as conventional, 2-light system.

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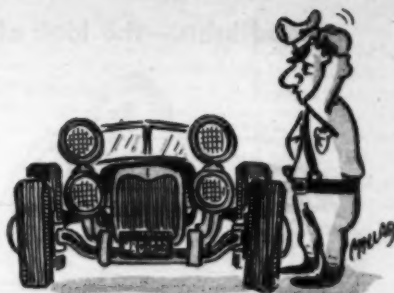
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And this should dispel any rumors.

Whether the obviously-coming quad headlights were intended originally as a safety factor or merely a styling gimmick is a moot question. But, as long as GM can more or less be given credit for introducing the idea as it has developed, then we can safely put the emphasis on the gimmick angle. Safety can be considered an advantageous by-product, yes, but still a by-product.

It was the same deal with the wrap-around windshield. GM pioneered it, touted it so highly that competing manufacturers were forced to submit to being termed copyists or be labeled as having an out-of-style product. Again with bumper exhausts, and so forth. But let us not start a controversy that might have serious repercussions behind closed Detroit styling doors. The lights are—let's face it—here. Not with the rush predicted before the '57's made their debut, but we are on the brink of the 4-light era and there's little we can do to stop it.

But why stop it indeed? Let's follow suit on our customs as long as we've been given the hint they're coming. There are only six cars (Imperial, Chrysler, Nash, Ford, Merc and Lincoln) which have this setup for '57. So let's jump at the advantage and update our older cars before quads become universally used.



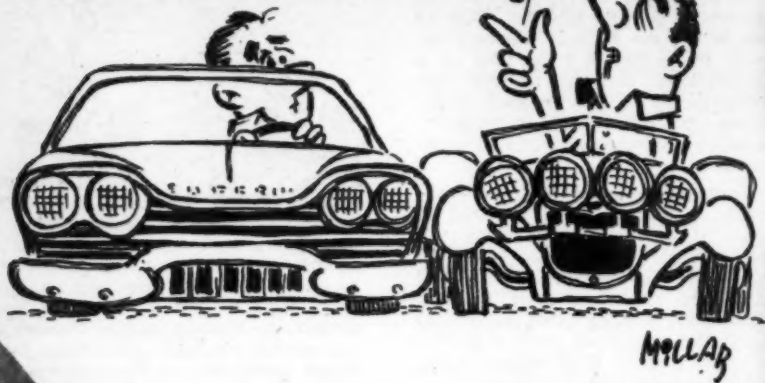
The four light system can be adapted to nearly any car—as long as that car's basic styling concept does not prohibit it—because each of the lights are smaller physically than those formerly considered as being standard. Thus, two of the new lights will occupy less space than would two standard bulbs. Therefore, the various arrangements offered by the above four cars can be purchased and installed with little more customizing labor than frenching or shading an older light.

Though there are those who will note this and take the easy way out in adding quads to their own chariots, R & C had decided on a quad light arrangement several years ago for its experimental Chevy pickup truck, and we decided to stick by our guns and be more or less original. ●

Budd Anderson (see Man Behind The Models, R & C for Jan. '57) envisions the 1958 Ford along these lines. Restyling a miniature plastic model of the early '57, Budd has placed twin 5-inch lenses into Ford's fender without altering the fender itself, what the factory had up its sleeve at press-time. Customizers could follow suit by purchasing the small seal beams, building a new light shell with little trouble.



Headlights—the look of '57.



BARRIS MEETS THE TRUCK

Part III



Designed and performed exclusively for ROD & CUSTOM by Barris Kustoms of Lynwood, California.

Photos by Geo. Barris

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THE DECISION to use quad headlights on R & C's experimental Chevrolet pickup truck was a difficult one to make. Working in conjunction with suggestions submitted by readers and adding a good many innovations of his own, a basic design for the truck was set down several years ago by stylist Lynn Wineland. When modifications actually began, plans were altered, further ideas incorporated and new gimmicks added as work progressed. The front end was the most baffling. We wanted the truck to be as modern as possible, yet it should retain lines basically truck-ish and the styling should definitely harmonize with the rest of the body. Thus, we had ourselves a problem. This is one reason why work up front was kept until last. During the three years the hauler has been under construction a good many fads have grown, then dwindled again. But the finished $\frac{1}{2}$ -ton would have to represent much thinking-ahead so the design wouldn't be outdated before the truck made a tour of the major auto shows across the country.

The original idea for quad headlights was worked up by Wineland

three years back—so imagine our indignation when GM displayed quads on a Dream Car! Knowing we would be termed copyists if we duplicated the light treatment, we hashed and rehashed sketches and drawings trying desperately to out-think Detroit before quad lights became universally used on new cars—and here we are on the very brink of that era! Drawings by the hundreds were sorted and resorted, changed and discarded before Barris (bodymen elected to perform the fete), R & C's Wineland and other members of the staff finally nailed down an idea—but then the shapes desired had to be worked into the truck's fenders. No simple chore since a pencil can easily change things as needed, but when it comes time to shove steel around you have to compromise.

And that's why, in the first picture on this page, a ruler is used to measure area available even though the design had been set down on paper months before.

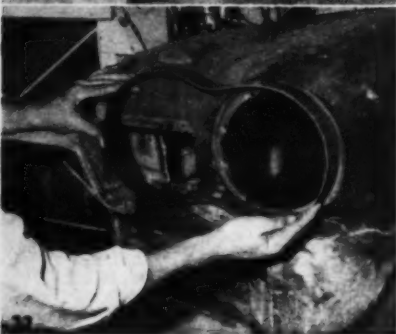
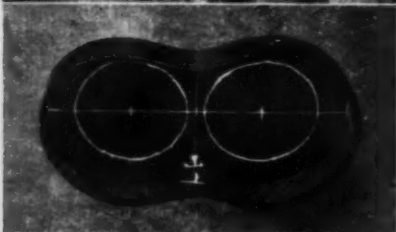
And so, we hope, we have a different concept of quad lights than do any of the Detroit cars so blessed. And if you'd care to follow suit, or merely look in wonder at what lies behind such a move, read on.



Area to be occupied by quad lights is measured and found to be sufficient for mounting the twin $5\frac{1}{4}$ " lenses. Design will be completely original rather than adapting units from one of the '57 cars with such a system.



The first actual step in such a job is cutting a template before slicing into metal. Here sizes of twin lamps are drawn over a centerline with a compass, with a sufficient gap left between bulbs for service, cleaning.



BARRIS MEETS THE TRUCK

Outer chalked line denotes shape of opening to be cut into each front fender. A pair of shears are then used to carefully trim template along the marks. Caution was used to be certain the halves were exactly symmetrical.

A length of 1-inch strap iron, $\frac{3}{8}$ -inch thick, is hammered to match outline of template shown in preceding photo. Top and bottom straps are made separately to ease job, are welded together to form rough "8" necessary.

Completed, curved strap metal is fitted around template to insure conformity to specifications. Strap iron will be welded to fender to give each dual-light unit "depth" since each will be recessed into its fender.

Before uniting strap metal to fender, it is used as pattern over perforated metal which will serve as backing for fender opening. The individual light housings will be bolted directly to this metal after it is chromed.

Metal outline is compared to existing hole in fender for original light. It is apparent that entire forward edge of fender must be reworked in order for the new light system to be worked into design Barris has set down.

ROD AND CUSTOM

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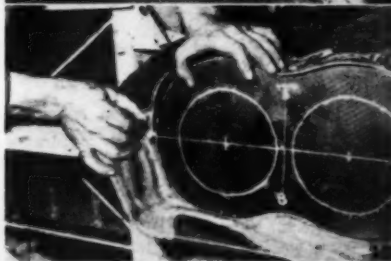
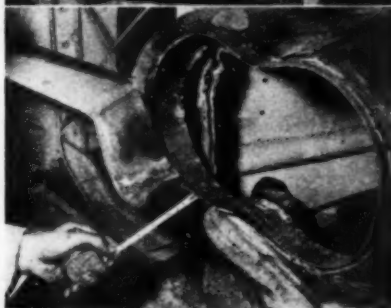
Cutting torch is seldom used on body metal because of warpage, but in this area metal is severely curved thus its shape gives it enough strength to prevent distortion. Area within the chalked line will be eliminated.

After torching, metal is temporarily clamped in place. Outer edge of fender, around old light opening, was slit so metal could be brought to new shape. Alignment checks are now made to be sure the opening...

...is square with front end grille shell. Once it was carefully fitted and located, it was tackwelded where it coincided with existing fender metal; i.e., around outer edge, just above the grille shell, then fit checked.

A chalked line is drawn squarely rearward along fender top in line with upper dip in shape of new headlight rim. Stock fender had suggestion of dip here, but it had to be made much more pronounced for desired effect.

As a further check, original cardboard template is fitted. Horizontal chalked centerline indicates, at the edges of opening rim, where overhanging light shade will begin. Using corresponding marks as a guide...





BARRIS MEETS THE TRUCK

...steel rod is bent to shape and wedged into position. This marks forward edge of fender after upper portion has been extended. Note severe amount of welding which took place due to radically new light system.

Small cardboard templates were made to fill gaps between fender and forward-curved rod. Shapes, once transferred to sheet metal, were cut out and welded in place as shown. Stiff metal strap helped prevent warpage...

...during the lengthy welding process. A good many lookers-on at the Barris shop couldn't imagine what was going on here, returned day after day until, at last satisfied, they saw the quad jump unit installation.

Mentioned earlier, top of fender had to be dipped to conform to light rim shape, so hours of hammer-and-dolly work were spent. Metal-working technique; hammer and dolly are brought together at same instant,...

...rather than dolly held tightly against metal as hammer falls. Once brought into rough shape, grinder cleans surface and reveals where high and low spots are. Once these are worked out, leading procedure...

ROD AND CUSTOM

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...is next since inner steel rim prevents bodyman from hammering sheet metal above. Heated steelwool is dipped into special compound, rubbed briskly on wayward fender until all cracks and crevices are flinned.

Body file is scrubbed over fender-light areas for final check of metal smoothness. Cross-filing (filing in every direction) will show up minor flaws which can be lightly tapped into place with a body hammer.

Final sanding of leaded and bare metal areas is followed by cleansing with grease and wax removing solvent, a quick once-over with lacquer thinner before application of primer. With fender thus in shape for light units...

...fog light housings are relieved of their original brackets, dead-center location of brackets marked for drilling and placing of mounting bolts which will extend through perforated metal shown in an earlier photo.

Drill is run through light housings. Bolt will be brazed on, passed through corresponding hole in "holey" metal screen, then shims inserted for correct alignment of lights. Unit is retained with metal screws.

FEBRUARY, 1957



CUSTOMS PICTORIAL

The Pre-War Cars

THE CUSTOMIZING hobby really spread like wildfire after World War II, especially with the introduction of the 1949 models which seemed better suited to the restylist's art than their predecessors. Before 1942 the fad was limited, the main source of interest being centered on the West Coast, though the East and Midwest did turn out many fine looking cars. It has been often stated that the fad began to mushroom during the war as the enthusiasts did more of their share of "selling" the hobby during mess hall and barracks get-togethers. And we'll go along with this thought. But, one way or another, more and more customs began turning up all over the country as cars became more plentiful and the average person became better qualified to purchase one due to across-the-board salary increases, etc.

At the present, then, the fad is at a new peak and shows every indication of continuing upward; but the cars that are being worked over and altered in every conceivable manner are, for the most part, those built after the introduction of the '49 models. The old pre-war cars are seldom customized any more, the ones in evidence having been so treated perhaps ten or more years ago.

Not just a little irked at this turn of events, we offer here a group of recently restyled, pre-war cars—and most beat by a mile their ten- or twelve-year newer offspring as far as looks are concerned.

So before you rush out and buy that new car off the showroom floor simply because you want to build a smart-looking custom, glance over these offerings then go right on by that dealership to the used car lot next door. That's where the real raw material awaits you. ●



Above. Removable turret top once covered a Chevy sedan. Even minus its covering, Merc still defies identity. Give up? It was a '40 coupe—deeply channeled and with top chop.

Right. Properly termed a radical custom, the Merc seems to hint at European styling. Obvious practicability proves that a car customized tastefully, can still be driveable.

Right. Clever use of Lincoln grille components, Chevrolet fenders and Merc hood changed appearance of this car to such an extent it is now difficult to identify it.

Left. Deep body channel was matched up front by sectioning hood sides. Result is a true "pancake" hood like late stock cars. Note old-style frenched headlights.

Right. Chevy deck lid was grafted to Merc panels and all seams welded shut. This would be as close to the "one piece" look as it is possible. Lights are Pontiac.



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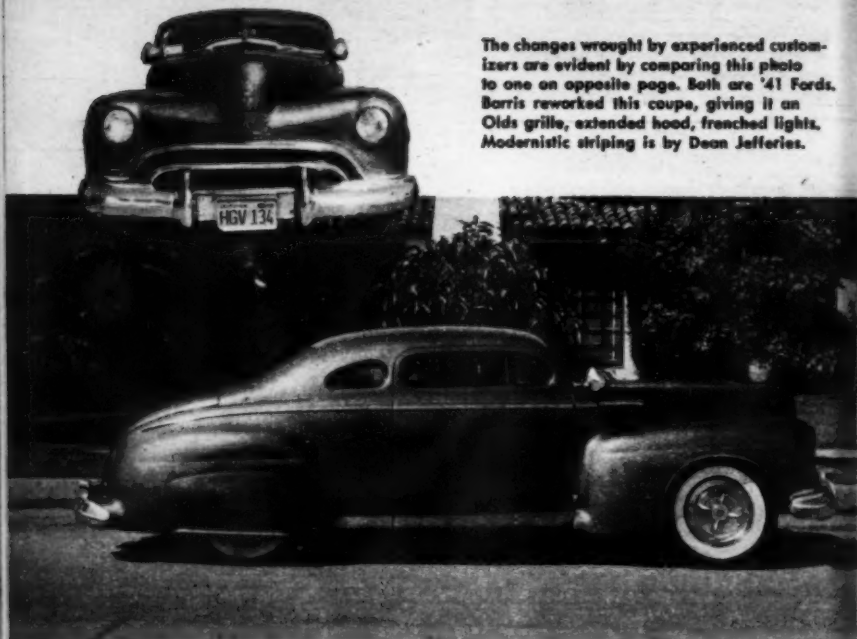
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FEBRUARY, 1967

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The changes wrought by experienced customizers are evident by comparing this photo to one on opposite page. Both are '41 Fords. Barris reworked this coupe, giving it an Olds grille, extended hood, frenched lights. Modernistic striping is by Dean Jefferies.



PREWAR CUSTOMS

continued

Radical top chopping, severe lowering combine to drop overall height of the '41 by nearly a foot.

Notice side exhaust peeking out ahead of rear wheel — a modern touch for older cars.

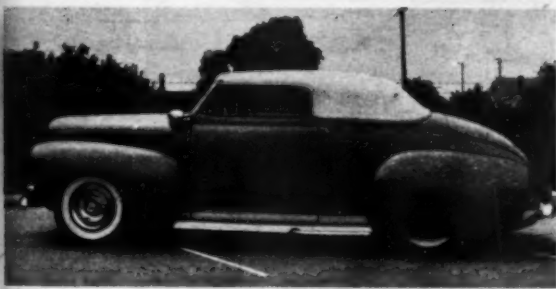


Bumper-mounted Chevy taillights and filled seams between fenders and the quarter panels update Ford several years. Handleless deck is opened by pressing a dashboard-mounted button.



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Elimination of unnecessary chrome, filling of seams simplify classic '41 lines. Bumper reveals no bolt heads, has been fitted with license frame from a '49 Chevy. Barely discernable, lock is set into crank hole in grille for turning off electrical operated doors.



Little chrome trim survived extensive customizing project. Carson top doesn't fold, can be removed and stored when weather permits it. Note exhaust through runningboard.

Bare expanse of fender metal boasts Stude taillight. Gravel deflector fills void between body and bumper, stock '41 suffered from drawback. Both these '41's are a light blue.



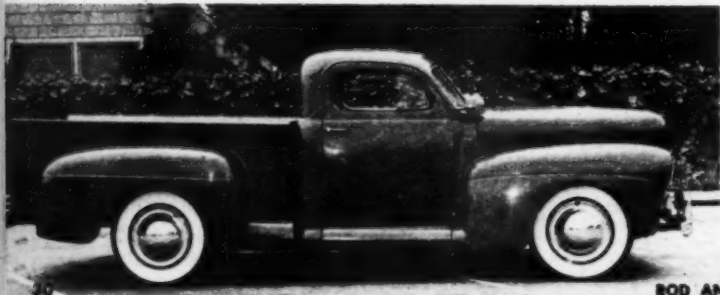


PREWAR CUSTOMS

continued



Though body and bed are not an integral unit, '41 Ford sedan/cum/pickup could be called a forerunner of the '57 Ranchero, displayed on the following pages. Practicability of this hauler is shown by its good ground clearance, retainment of door-handles. Appearance gives no hint of severe metalwork done during construction.

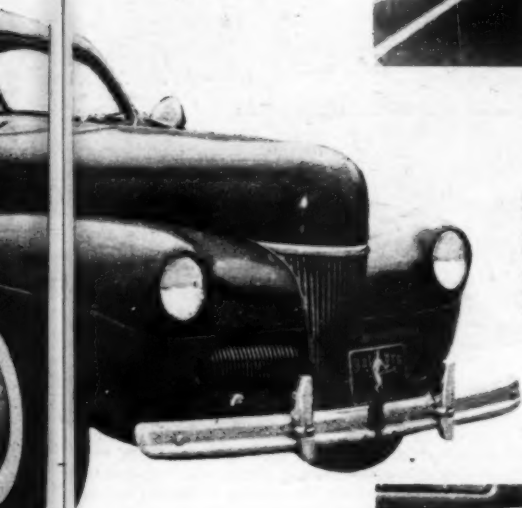
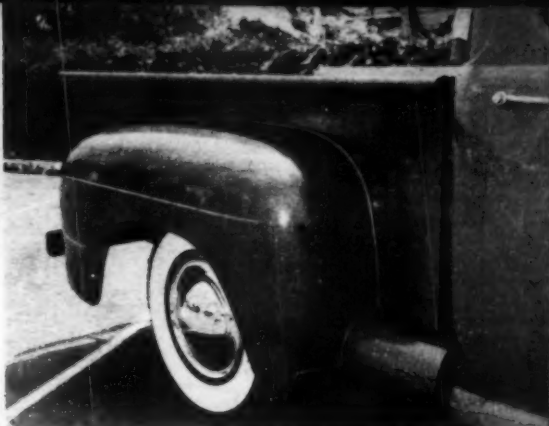


ROD AND CUSTOM

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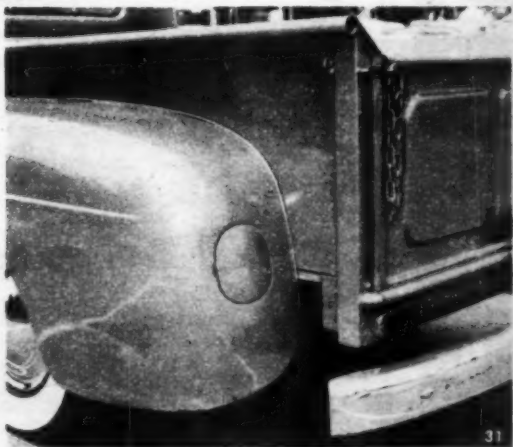
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After several feet were lopped from sedan body, pickup bed from '48 1/2-ton was mounted on frame and sedan's fenders re-installed. Fenders were widened by grafting sheet metal to fender's inner edges. Small hooks beneath bed roll secure either load or canvas tarp.



From front bumper to rear of door, the Ford might be but one of hundreds of similarly customized '41's; but from that point aft it is truly a one-of-a-kind vehicle. All components comprising the front end are stock '41 equipment, with de-chroming and fenching to add that "smooth" appearance.

1941 Chevy taillights repose below tailgate. Hint of sedan chassis beneath body is given by fender-mounted gas fill pipe. Pickup tanks are usually in or beneath cab, here it may be found under rear of bed. More work than meets the eye goes into a radical car of this type.



CUSTOMIZING THE



Ford's Ranchero as it could have looked. Reasonably minor grille and side trim changes might have made the pickup distinctive instead of giving it the "we-started-with-a-station-wagon look." Reduction of overhang 'round back makes the vehicle much more serviceable while not seriously reducing whatever payload it might carry.



ROD AND CUSTOM

Ranchero

...and rendering it a bit more practical.

BY HENNING & RITCH



FORD'S NEW Ranchero, an entirely new idea in a commercial vehicle, combines the luxury drive and appearance of a highly-styled car with the tough, working ability of a pickup truck. The Ranchero, unveiled for the first time in Quitman, Georgia during a county-wide celebration and farm dinner honoring Star Farmer Wesley Patrick, not only carries a payload of almost three-fourths of a ton during it's working hours, but provides stylish leisure transportation for the family. Production of the Ford Ranchero will begin later this year."

End of quote from the FoMoCo press release heralding the new vehicle which you see here...if you haven't already turned the page to something interesting. Now, H&R don't pretend to be farmers, or even ranchers, but we do live in the center of one of California's greatest farming areas and we contend that no one in the styling department was thinking of our neighbors when they got off on this one.

Eeashh!

The farmers around here live in their pickups. During the cotton and

(continued)

CUSTOMIZING THE RANCHERO continued

potato harvest seasons, particularly, they put in 18 hours a day and cover thousands of acres over pretty primitive roads. Most of the time the pickup beds are empty, too. Occasionally there is a need for hauling parts or supplies but the pickup is used primarily because it's practical. With it you

can push or pull, it has no fancy trim to be marred and, most of all, you don't feel out of place in one if you are wearing the dirty levis most of the millionaire agriculturists here prefer. The farmer gets so attached to his pickup that he drives it everywhere... even to the opera.

This is probably where the Ford people got the idea that a Fancy Dan model would make an appeal, especially to Mrs. Farmer... and, it's a sound idea. This thing may really go over with those who own ranches where oil has been found under the wheat fields.

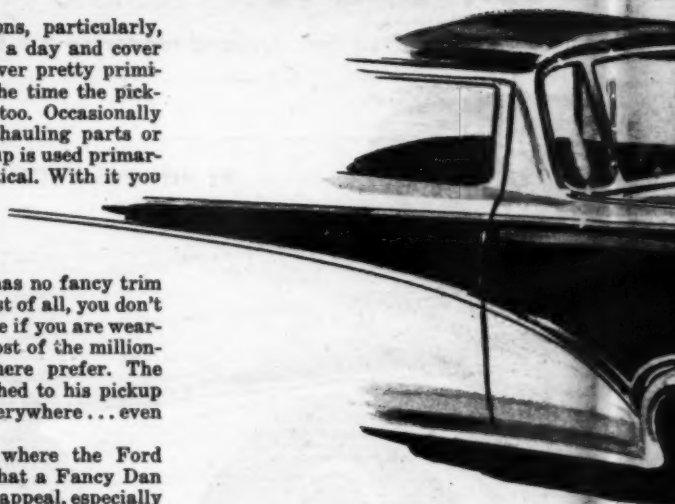
As far as we are concerned, though, most of the claims for the car-truck are full of a dairy by-product which is often transported in such vehicles. The statement that this is "an entirely new idea in a commercial vehicle" is pretty broad... and deep, too. The farmers where we grew up were chopping La Salle sedans down the middle and turning them into pickups all the time. Surely these custom jobs combined the "luxury drive" and the "tough, working ability" mentioned above.

The Ranchero, according to the Ford News Bureau, was a closely kept secret during its "long development period..." We don't know how fast things move at Ford, but if you want to develop a Ranchero of your own in a hurry, don't wait for future production just carve the top off a Ranch Wagon", fill in behind the front seat with body metal and the flat rear window

from a "Courier" and switch the trim from a "Country Sedan" onto the sides. That's it.

In our opinion it would have been wiser to have been a little more practical. The Ranchero is 18" longer than the stock Ford Pickup... most of it in overhang, of course. Why not chop some of that tail off so that you could load the bed without fear of tipping the front wheels off the ground? You will notice on the Henning rendering that this has been done and the rear end has been given a less bulky look by inseting the taillights and slanting the rear fenders in slightly.

We would also like to get away from the idea that this is a chopped up passenger car (frankly we never did like those farmer-style La Salles) and give it a more practical or masculine look. Why not put heavy bumpers on front and rear? Ours are split and welded



Familiar Ford fins for '57 have been retained, but lenses fringed and overhang reduced. Merc split-type bumpers replace Ford's; are more functional and provide a center-mounting place for a trailer hitch. Rear window is from the "Courier" carry-all with wrap-around effect to improve vision.



'57 Mercury. Simple, sturdy and serviceable.

More from the release: "The truck is the first in the industry to have a gold anodized aluminum strip as an option with a two-tone color scheme."

Now, there's a milestone! Imagine!

Can't you visualize a farmer asking a salesman, "Does this Ranchero come with overload springs?" and the reply, "No, but it has a gold anodized aluminum strip as an optional extra."

Eeashh! (Again!)

To make a distinctive truck, however, the passenger car front fender line could well be modified by rounding it out to eliminate the unsightly bulge which marks the '57. Forget the anodized strip and carry a chrome strip from the point where the headlight brow meets the fender down to the back wheel well and over it. Then run a narrow chrome bead from the same

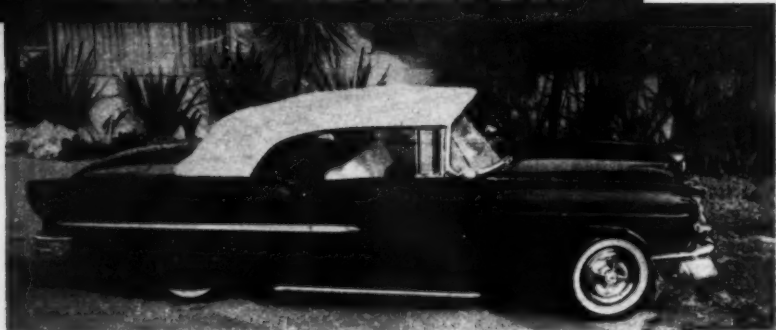
place along the break line to the top of the fin. Use this enclosure for the two tone option. Something different and not too flashy.

We trust that the cab suits everybody at Ford because we can't see any reason for the flat rear window. Why, even the Courier, Ford's delivery panel, has a wraparound and it's 59.3" from the driver's head. No, let's not save anything, let's put one on the Ranchero to help escape the feeling that some farmer took the torch to his car.

Star Farmer Wesley Patrick gets the first Ranchero off the assembly line, according to the Ford news story. If he will send it, (postpaid, of course) to us we will contribute a complete set of restyling blueprints and recommend a good body shop. Along with this honor goes the right to use a solid chrome decal for the tailgate reading "No Hay Ranchero." ●



FLINT VIBRATOR



Deafening exhaust set-up is tied in with '55 Corvette engine through cast iron headers. New displacement is 310 cubic inches and racing equipment will soon top off the mill for better performance at the drags. To this end, a Corvette stick-shift transmission was installed. Shift lever protrudes through floor carpeting. With its close-ratio gears, the Pride of Flint sacrificed a little low gear jump, but the winding abilities are just compensation. Currently a to mode, striping was applied by newcomer Jerry Johnson of Temple City, who may be reached through the Glendale Muffler and Kustom Shop. Jerry's work reflects his own individuality, and his style differs from the striping by other local artists. Dodge Lancer Hub Caps, another favorite with custom enthusiasts nestle in the white walled tires. Appearance is changed greatly by painting head and park light rims for frenched appearance. If a car was to be selected as representative of this year's custom fads, it might be Dance's '55 Chevy, the Flint Vibrator.





'Fifty-five Chevy is current custom favorite. This ratlop owned by former Jackson, Michigander, Bob Dance, now living in Glendale, California, got the cook's tour as dictated by contemporary fashion. Jackson metalman Harold Reeves began the project, later completed by the Glendale Muffler and Kustom Shop. Lowering is to limit of practicability, with outside exhaust pipes adding to the illusion of proximity to terra firma. Bubbled skirts, hand-formed by Detroit Jimmy Jones are scarce item on West Coast, causing much neck twisting. Grille treatment is same as modification described in Dec. R & C, but hood scoop above was major task. '54 Merc taillight lenses, down-side-up are in fender tips. To change rear appearance, stallion wagon bumper guards frame plate.



by parker hunt



design contest

RESULTS

LONG ABOUT September of last year, R&C unfolded plans for a Design Contest. One in which our readers could put down on paper all the automotive plans and ideas they've long had kicking around in their noggins. Of necessity, contest entrants were limited to practical automobiles — fins, rocket pods, etc., were permissible, of course, but the automotive sketches had to reveal a fully practicable, operable car. Even further shackling, it was felt, was necessary, so we printed a wheel, driver and an engine—all in relative scale—and the accompanying rules and regulations pointed out that these vital automotive components had to be capable of fitting into the cars sketched.

And now it's all over. The winners in the various categories have been notified. Our heartfelt thanks go out to the 280 entrants who submitted 385 paintings, rendering, sketches and line drawings. Rods and Sports Cars, Utility Vehicles and Custom Cars were the categories in which prizes were awarded with a surprise award in a mystery category, details for which are revealed for the first time on one of the following pages.

MYSTERY CATEGORY

With the thought that perhaps the Design Contest Judges would be assailed with a good many sketches of cars which did not exactly fall into the three categories listed, we included a mystery category without making any qualifications regarding it. The idea was to group under this heading those entrants whose drawings were of the weirdest automobiles imaginable. And don't think this category was any easier to judge than the others. Entries included winged boats which could fly and float as well as be driven on the highway; two-, three-, and five-wheeled vehicles powered by everything

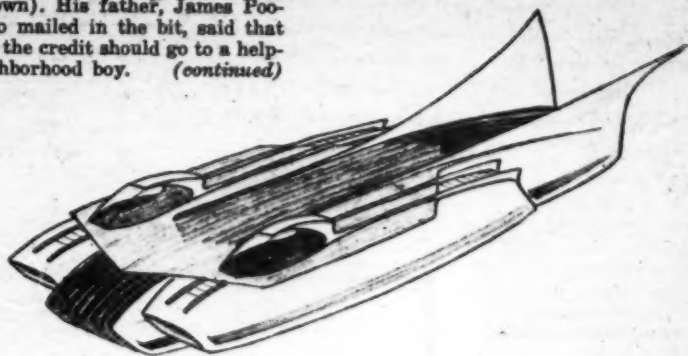
from rubber bands to an atomic reactor. But the one which topped them all was this entry of Paul Mecham, 2316 So. 7th St. E., Salt Lake City.

Paul's "car of the future" contained the proportioned components set down by the contest rules; yet it was so unusual and varied in many respects that it more than qualified as being the sole winner in this class.

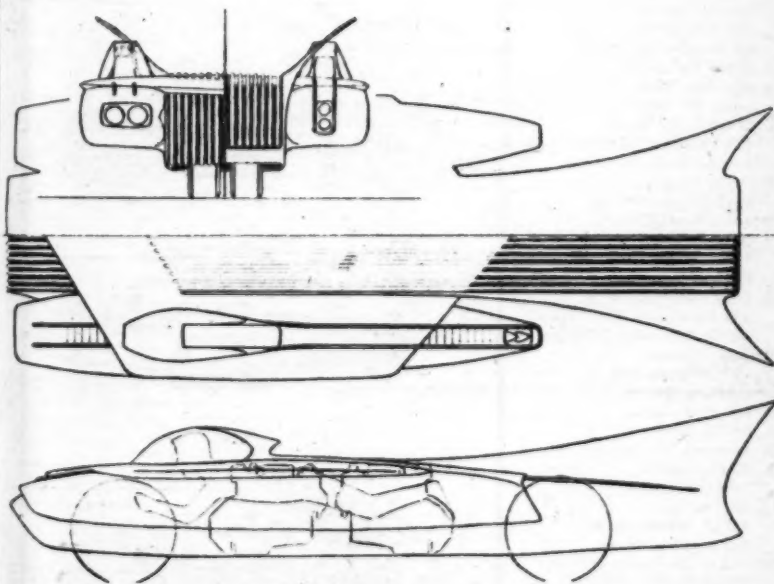
For topping off this division, Paul Mecham will receive, in addition to a 3-year subscription to R&C, a merchandise certificate for \$50.00 to the automotive specialty shop of his choosing. Congratulations Paul!

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Special Honorable Mention in the mystery category goes to young William Poobah of Abilene, Kansas, for his remarkable three-wheeled entry (not shown). His father, James Poobah, who mailed in the bit, said that much of the credit should go to a helpful neighborhood boy. (continued)



PAUL MECHAM



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1st ... Complete set of push button controls (doors, windows, deck, etc.) for any car from BARRIS KUSTOMS

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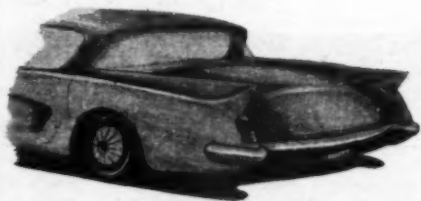
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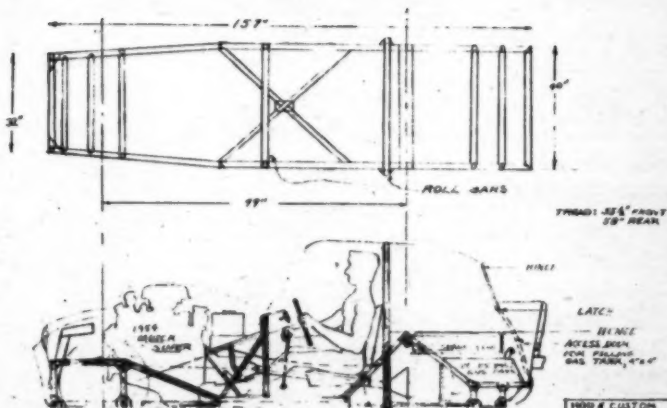
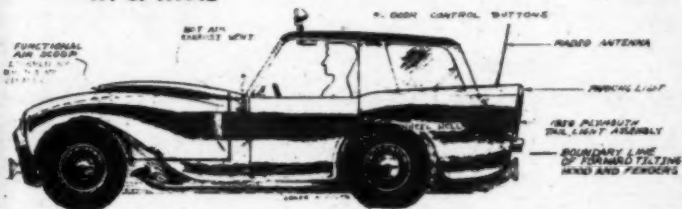
- # 1 Max Harrington
1225 Stanley Lane
Napa, Calif.
- # 2 Louis Mason
1401 S. Kansas
Wichita 16, Kan.
- # 3 W. C. Ware
422 Wesson St.
Eldorado, Ark.
- # 4 Ronald Simmons
253 S. Ave. 55
Los Angeles 42, Calif.
- # 5 James Richmond
623 Elber Ave.
Akron 19, Ohio
- # 6 Charles Alan Seger
119-20 Union Turnpike
Kew Gardens, 15, L.I., N. Y.
- # 7 David Libeu
4715 Guerneville Rd.
Santa Rosa, Calif.
- # 8 Dale Colkins
19931 Lennane
Detroit 19, Mich.
- # 9 Greg Meisenholder
533 Muskingum Pl.
Pacific Palisades, Calif.
- # 10 Paul R. Saxon
224 Millvale Ave.
Pittsburg 24, Pa.
- # 11 Robert A. Jensen
Berlin, Germany
- # 12 Joseph A. Licciardello
95 Osgood St.
Lawrence, Mass.
- # 13 Joe Martinez
427 E. Woodlawn Ave.
San Antonio, Texas
- # 14 Phil H. Preseley
815 N. Elm St.
Greenville, Ill.
- # 15 Ernest R. Williams
1322 Park Ave.
La Habra, Calif.

LOUIS MASON





W. C. WARE



1000 & CUSTOM
DESIGN CONTEST
CUSTOM

RODS AND SPORT CARS

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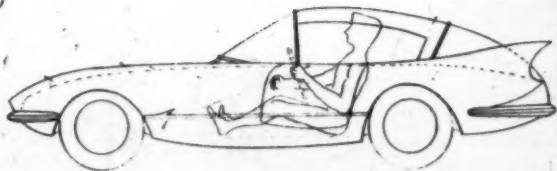
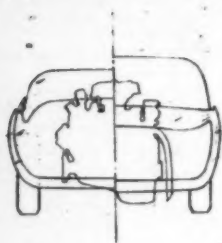
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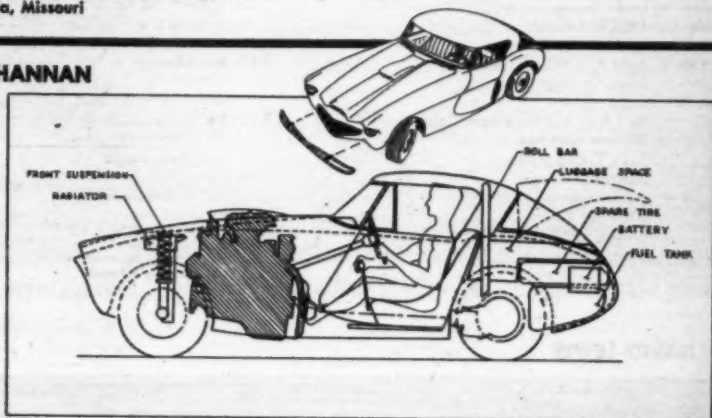
RONALD SIMMONS



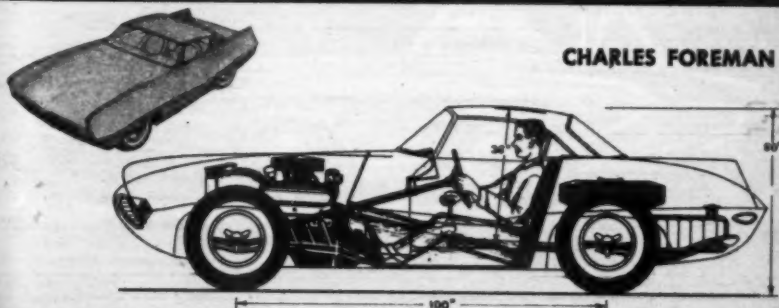
- # 1 Ronald Simmons
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625 No. Mariposa
Burbank, Calif.
- # 3 Charles E. Foreman
1905 S. Lincoln St.
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4548 N. Ashland
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- # 6 Albert Nagels
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- # 7 Roy Lonberger
609 S. Essey
Compton, Calif.
- # 8 George Swancutt
Dept. of Engineering Drawing
School of Mines and Metallurgy
Rolla, Missouri

- # 9 A/3c Richard E. Shell
AF 16515961 Box 261
28th. Log Supp. Sq.
Hill AFB, Utah
- #10 James Y. Orr
9120 20th St.
Woodhaven 21, New York
- #11 Bob Hogan
4707 Don Pio Dr.
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- #12 Steve Meisenholder
533 Muskingum Place
Pacific Palisades, Calif.
- #13 Will Rollins
5205 N.E. 2nd Court
Miami 38, Fla.
- #14 Robert Riolo
1342 Woodland Dr.
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W. C. HANNAN



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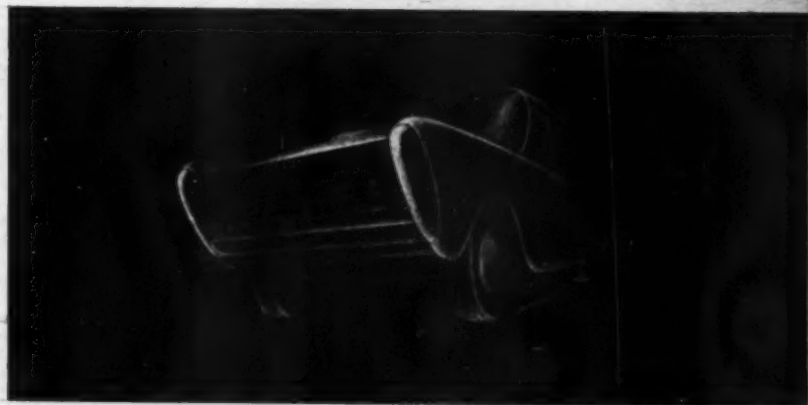
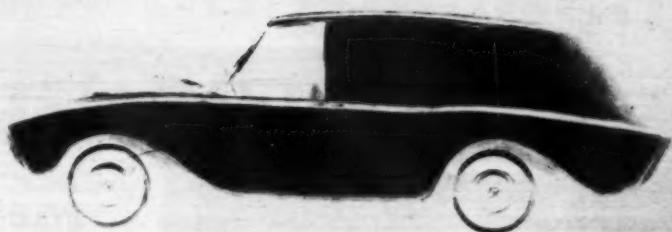
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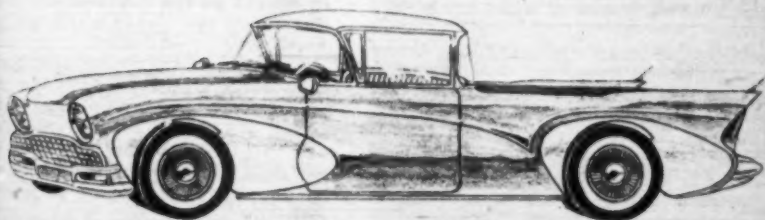
DAVID LEWIS



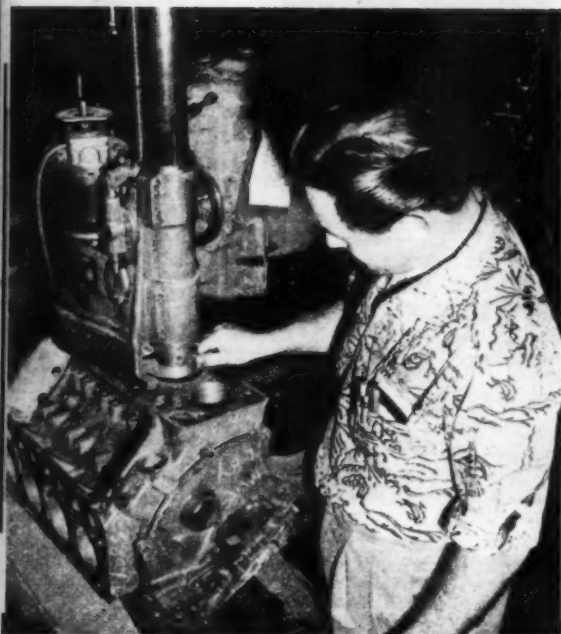
PETE FORBES



JOHN JAEGER



hopping up the Ford OHV's



BY LES RITCHEY

Ford expert, author Les Ritchey, shows positioning of single boring bar atop head surface of Merc ohv block. Some large engine building companies have multiple boring jigs, performing operation on four cylinders at a time. Careful checking for exact alignment with crank centerline and sufficient wall thickness is imperative to obtain top-notch job. Realizing that average rod-der lacks specialized equipment necessary for performing these important steps of hopping up the Ford engines, Ritchey tells in this section of series what to make sure is done at shops where your work is taken, and limits to which your engine may be bored and stroked.

Now that we have selected the right heads, the proper valves and given some explanation about doing the right kind of a job, we come to the broad scope of increasing cubic inch displacement. There seems to be a trend of "no matter what you have, go bigger!" Although this is not completely the answer, an increase in displacement is wise in building for a particular competition class. It has been clearly shown by performance that a small, well-tuned engine does right well for itself against the big inches built with nothing more than volume in mind.

If you are one who has decided to go all out on the displacement route, there are a few things which are well worth your investigation.

1. Find out from a competent boring shop just how far it is wise to go. Also how much stroke can be utilized before stress, strain and interference from cam grinds or lobe sizes becomes bigger than you or your pocketbook can handle. What I am saying is, just because Joe bored to four is no sign you should, if it is not safe — he might have struck water and just neglected to mention it to you.

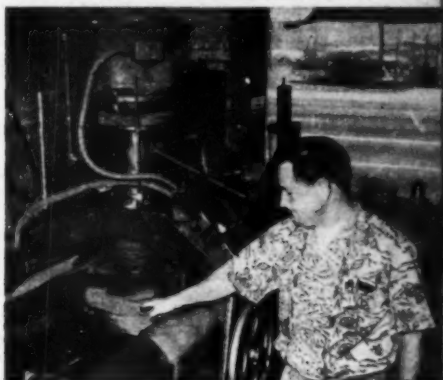
Part III

2. Once bore and stroke sizes are finally decided, it pays to know who you deal with. In our particular case, with building a 356 cu. in. mill for the R&C Thunderbird, the stroking of our 8CM-6303 crank to 3% in. was done by CT Automotive who also supplied the Jahns three-ring aluminum pistons. Their well known stroker kits are ground by Joe Armstrong whose crank grind shop is located in the CT building in North Hollywood, California. Boring was done at the Thomas Engine Corporation in Pasadena and balancing of the complete engine assembly including clutch and flywheel was done at Vic Edelbrock's. The process used on these operations are of no consequence to you as individual builders because the elaborate equipment necessary is not found in backyard garages, but a knowledge of how it is done and why will help you to be insistent on nothing less than a precision job and understand the importance of it for correct end results. As an example, in the process of crank stroking, throws are welded, absorbing a staggering amount of heat which can do stress damages to the crank beyond repair, if not controlled. A good, finished crank should be trued before being ground. Today's modern production engines come off their individual process lines in great quantities and once in a while, something slips. The ratio is small, but nonetheless it pays to check thoroughly before putting many dollars into something that was goofed before you even got started. For an engine which will really produce, the alignment must be correct to within thousandths of an inch. Neglecting these important steps may be the difference between not quite getting across the line ahead of the other guy, or, having trued and checked each step, being a trophy winner each time out. Before boring

your block, the distance from the crank center line should be measured to be sure the block is true. The bore angle in relationship to the crank should be checked. The trueness of the head's seating surface must also be scrutinized. The complete oil galleys and system should be pressure-checked and the water system pressured to show up any very minute leaks which could cause you many problems at a later time. These things take equipment much costlier than most people realize, but when building for go, a shop with these facilities must be found. It sounds like a lot of checking but it actually is not too costly. The relief from that old dull feeling when first firing up when you say to yourself, "Will it go or blow?" is worth every penny. Before boring the cylinder to the new size, mike each piston to make sure the size is correct. Normally, a manufacturer leaves several thousandths clearance by making the piston undersize of the specified bore diameter. For an engine such as ours, to be run on the street as well as for drag, straightaway and such, I recommend a skirt-to-wall clearance of .0025 in., or .005 in. larger on the bore than the piston diameter.

(continued)

Surface grinder at Thomas Engine Corporation in Pasadena is used to grind block as necessary to true head and pan surfaces with crank centerline and square heads at right angles to bore. Properly built engine using these methods has it all over one hastily flung together with attitude of "it can't be too far off".



HOPPING UP THE FORD OHV's

continued

BLOCK IDENTIFICATION (top of block near distributor)	ECG	EDB	ECJ
DISPLACEMENT	272"	292"	312"
STOCK BORE	3.62"	3.75"	3.80"
STOCK STROKE	3.30"	3.30"	3.44"
PRACTICAL BORE LIMIT	3.75"	3.875"	3.875"
PRACTICAL STROKE LIMIT (no interference with cam, etc.)	3.50"	3.50"	3.50"
MAX. BORE LIMIT	3.875"	3.875"	3.937"
MAX. STROKE LIMIT	3.50"	3.640"*	3.640"*

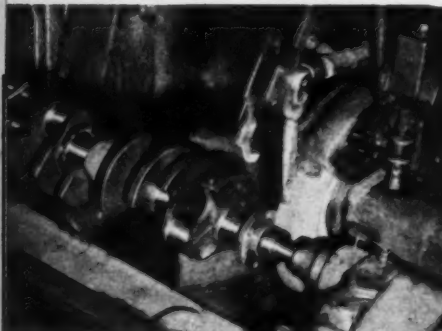
* Cam side of con rod must be ground for lobe clearance. Check con rod shank at bore for minimum of .030" clearance. Block may be ground at bottom of cylinder if interference occurs.



Ford 8CM-6303 crank, originally of 3.44" stroke is to be stretched out to 3.640". First step, performed at CT Automotive, is to arc weld on outside surface of throws. Care must be taken to add metal on smoothly with no pockets which would show up later during grinding.



Terrific heat absorbed by crank during welding destroys original alignment of journals. Before any grinding is done, shaft is placed in hydraulic press and pushed back to straight position. Tolerance here is .010" including throws which must be 90° to each other. Care taken now pays off later.



Final and vastly important step of grinder is to square back side of flywheel mounting flange. Effects caused at high rpm's by wobbling clutch and flywheel are self evident. Even minute deviation will result in inability to get those extra horses for which engine was built.



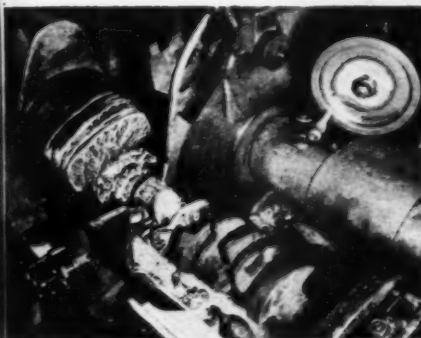
Delicate balancing of each individual rod and piston is performed on shadograph. Red big end pivots on one scale while pin end is supported on other. Accuracy to one-quarter of a gram is possible with sensitive equipment. Pistons and pins are all of identical weights.

ROD AND CUSTOM

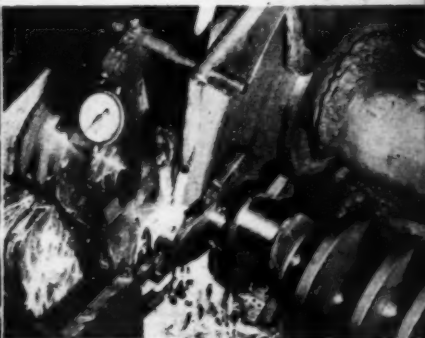
Next comes the choice of a cam shaft. If this were an easy job, everyone would be driving a bomb. Such things as gear ratios, tire size, displacement and ratio of bore to stroke enter greatly into getting the right cam for your engine. It seems that a lot of importance has been put on rpms, which mean almost nothing. I've heard guys say many times, "My car turns 6,000 rpms, but he got me two car-lengths."

It's something that is all too seldom done, but a list of some of the better known cams should be made and then a complete rpm and torque curve should be requested for each. Any cam grinder who knows what he is doing and is giving you something for your money will not refuse your request. From this you can see where your best pulling rpms are, and where torque starts to leave

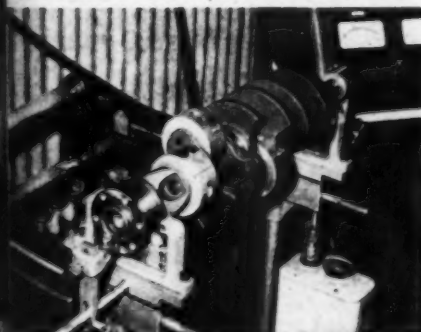
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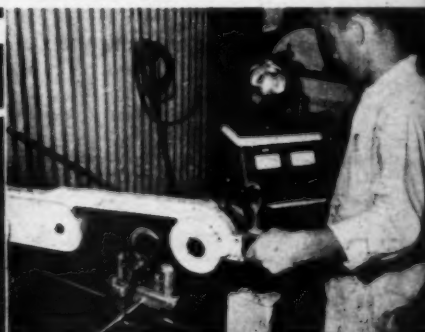
Into Joe Armstrong's crank grinder at last. Coarse wheel knocks down rough welds, widening throw surface out to accept two rods with lubrication clearance on each side. Rough grind takes throw to within .030" of finished size. Oil passage holes will be re-drilled later.



Fine cut wheel grinds throws to standard bearing size and cuts main bearing surfaces to .010" under standard, assuring perfectly aligned crank. Dial indicator attached to machine is closely watched to avoid goofing up at this stage of the game. Coolant prevents distortion.



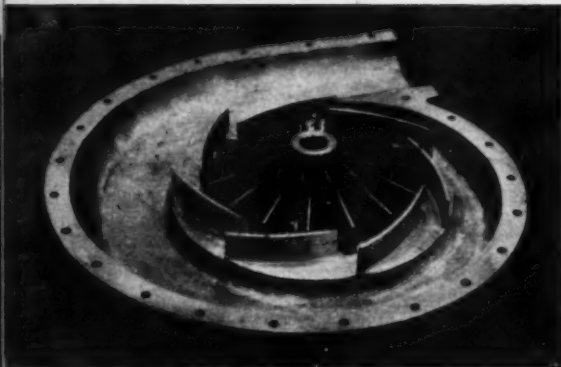
Once weight of reciprocating parts, composed of pistons, pins, locks, rings, rods, caps, nuts and locknuts has been established, bob weights, accurate to one gram, are bolted to throws, simulating assembly of complete crankshaft and related parts. Shaft is ready for dynamic balance.



Camera stops action as shaft is spun by motor-driven belt running on flywheel flange. Flashing light indicates where crank is out of balance. Steel plates are welded to counter-weights to bring crank back to perfect balance. Important operation will result in vibration-free performance.

building a supercharger from scrounged aircraft parts.

"AT LAST, A BIG



Inside glimpse of the workings of the converted aircraft supercharger. Shown are the impeller and the diffuser vanes cast into main half of body.

MAXIMUM horsepower per pound of powerplant weight — which is a prime requirement for any high-performance vehicle — absolutely calls for some form of *pressure induction* on a piston engine; supercharging, in other words. No two ways about it. And big horsepower calls for big superchargers — blowers that will kick out huge volumes of air at high pressures without absorbing excessive power to do it. For the last six or seven years the hot rodders have been leaning on the big GMC 6-71 Roots-type blower for their super-power competition engines.

It's not the answer.

"Way back in 1954 I called for some of you boys to look to the aircraft field for big *centrifugal* superchargers. (Small automotive units like the McCulloch don't have nearly the capacity we need, regardless of how high you wind 'em.) But the centrifugal compression process — engineers call it "adiabatic" compression — is inherently more efficient in terms of very high

air flow rates and pressures. It's the only answer for tomorrow's 600-hp Bonneville engines. And the beautiful part is that aircraft junkyards are full of basic units that could be readily converted for automotive use with a little time and sweat.

Which brings us to the meat of the story...

I've found at least one guy who took what I said to heart and actually did it! Harold Lindow, of Muskegon, Mich., engineering student at Michigan State University, has pulled an impeller and gear drive out of an old Pratt & Whitney, built up a single-outlet casing suitable for mounting on an automotive engine, and thoroughly tested the complete unit in the M.S.U. laboratories. It's a real neat and clever job — and it *performs*. Whether Lindow's handiwork will ever find its way onto a potential hot rod record-breaker is doubtful. I fear the lad is more interested in superchargers — *per se* — than he is in rods. Oh, he drives a

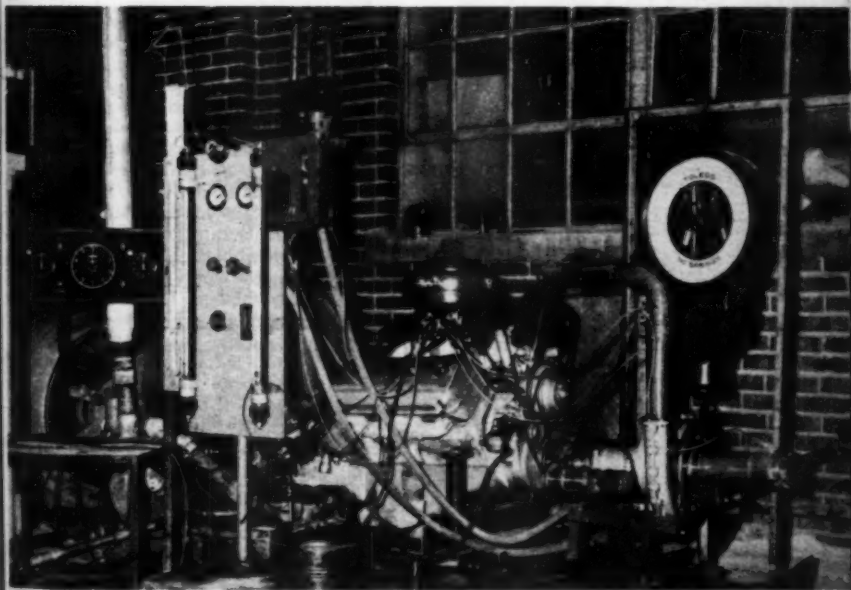
G BLOWER"

BY ROGER HUNTINGTON, SAE

Chrysler-powered '47 Continental, and he's a frequent visitor to the drag strips...but already he's more interested in building a *real* puffer out of a Rolls-Royce Merlin two-stage blower than he is in fitting this one on a competition car! But if Lindow's efforts only serve to fire up a little enthusiasm for big centrifugal blowers out there in California, I'll be more than satisfied.

Here are a few brief details on how he did the job:

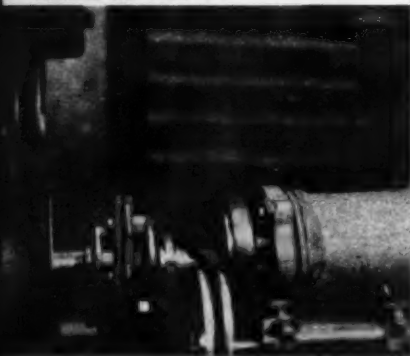
As mentioned, the impeller and gear drive were taken from a 450-hp Pratt & Whitney Wasp Junior engine, lifted originally from a surplus World War II Vultee training plane. The impeller is a 6½" diameter magnesium-alloy forging, and the drive consists of two adjacent spur gear trains giving a total step-up ratio of just 10.0:1. (An accompanying drawing shows the general layout of the gear train.) As used on the aircraft engine, the outlet duct (continued)



AT LAST, A BIG BLOWER *continued*

from the impeller was not of the usual spiral "volute" shape, but was a constant-section circular chamber from which nine tangent pipes led off to the cylinders. There were also no diffuser guide vanes in the area between the impeller and outlet chamber. With this layout, and with the engine operating at take-off power setting, the impeller turned 23,000 rpm and pumped approximately 50-55 lbs. of air per minute at a gage pressure of 3 lbs./sq. in.

Trying to adapt the entire casing and outlet chamber from the aircraft engine was out of the question — not only because of size and weight, but an automotive installation would call for only one outlet. So it was Harold's job to make up wood patterns and cast his own impeller and gear casings of aluminum alloy, with bearing bosses laid out to adapt the existing gear drive. Accompanying photos show the final result. He simplified the job of designing a volute shape for the main discharge duct by using a basic rectangular section (with deeply rounded corners), using constant width but letting the height gradually increase around the ring. This seemed to work very nicely. The impeller casing was made in two simple halves, to be gasketed and bolted together at 23 points around the rim.



Flexible coupling between Chrysler engine and blower was leather-and-bolt type. Some difficulty was encountered here preventing extreme rpm's and tests at higher revolutions.

Harold was anxious to experiment with diffuser guide vanes, and this may have been a mistake (at least in terms of an automotive design). If properly designed, diffuser vanes will raise overall efficiency in certain air flow ranges by helping to straighten the flow coming off the impeller and reduce turbulence... but they can also do more harm than good in other flow ranges because the air will literally "stall" over the tops of the vanes. Only high-efficiency constant-speed blowers use them, and you never see them on an automotive installation. Anyway, Harold tried to design his vane angles for air flow values in the mid range. (We'll see how this affected performance later.) The diffuser ring was cast and pinned in place between the two casing halves. The gear case was also cast. Incidentally, all these parts were cast from melted-down junk automobile pistons, which gives a fairly light and rugged aluminum alloy for general purposes like this.

The rest of the layout is very straightforward. The necessary ball bearings and shafting were recovered from the Pratt & Whitney; it was then pretty much a matter of lining everything up and boring the castings to receive the bearings. Actually, this latter is a very ticklish job when you're building a small package to rotate at speeds over 30,000 rpm and transmit up to 100 hp. Excessive gear whine and mechanical efficiency figures in the neighborhood of 60% suggest that Lindow's setup isn't the last word by any means. This matter of gear alignment should be considered critical on a job like this. Incidentally, lubrication here is handled by a simple splash deal in the gear case, using SAE 40 weight oil backed up by conventional leather oil seal arrangements. The layout seemed to work out okay.

The complete blower unit, including gear drive, weighs 62 lbs.

Lindow was fortunate in having the M.S.U. lab facilities for his testing. It permitted a very comprehensive evaluation of the potentialities of the rig.



An unusual fellow indeed!
More interested in blowers than in hot rods — or engines adapted to drag racing or top-speed running — Harold Lindow worked a year to convert the large aircraft blower. Result is told in text.

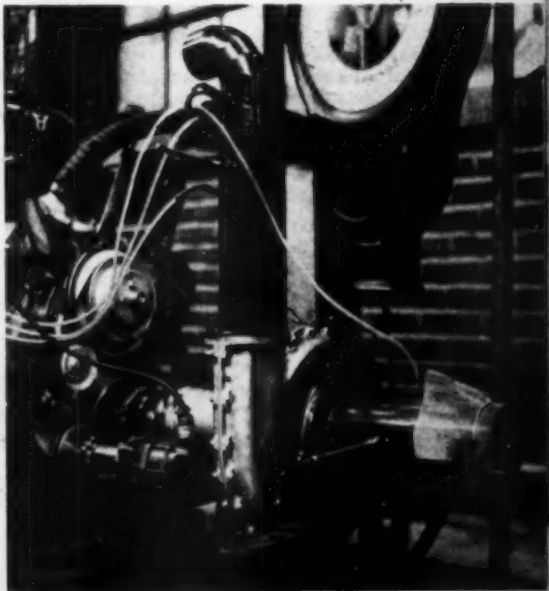
I spent a number of fascinating hours in a maze of dynamometers, torque scales, manometers, sensitive tachometers, pyrometers. His first job of the test program was to mount the blower unit in a ball bearing trunnion (rotating) cradle, and hook it up to the lab Chrysler V-8 through a flexible joint. (He used a simple leather-and-bolt arrangement that turned out to be a weak spot.) Now, obviously, if the blower casing were unrestrained it would just spin when the engine drove it. By fixing an arm to the casing and linking the arm to

a scale, the *torque input* to the blower can be read by multiplying the scale reading by the length of the arm! Torque times RPM is proportional to horsepower.

Lindow used the "orifice" principle to measure his air flow. That is, if you force your air through a pipe that is blocked by a thin plate with a hole in the center that is not more than 7/10ths of the diameter of the pipe — and if you measure the drop in pressure as the air passes through the hole — you can readily calculate the

(continued on p. 65)

Test instrumentation on blower unit. Thermometer taps are on inlet and outlet ducts; connections up around the orifice flange are pressure taps for various orifice sizes. Notice ball bearing trunnion arrangement for blower cradle.



When a pair of enthusiasts combine talents to beat all comers, Watch Out!
They're liable to produce...

JUST BECAUSE Roger Simonatti and Connie Burley decided to go into partnership on a pair of cars doesn't mean that the two rodders were by any means compromising on their engineering ideas. The two Portland, Oregon, artists had built up many going machines before they met as fellow members of the "Road Angels". The only real compromise involved in their partnership was the dropping of the "go it alone" attitude, and the sharing of the labor.

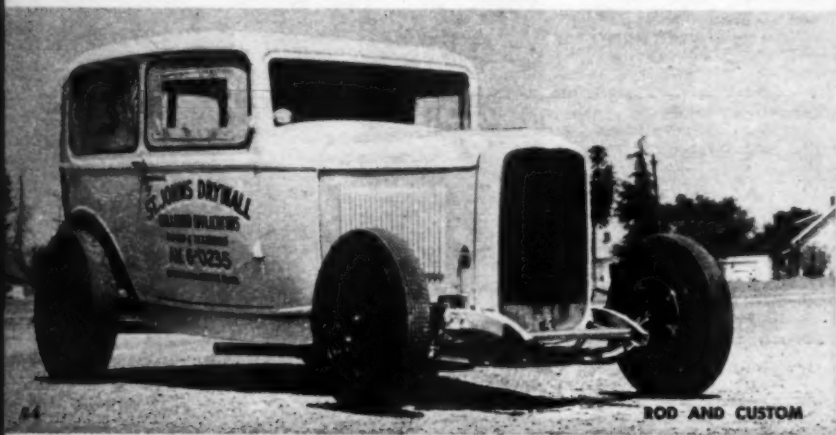
Connie had a little '32 Ford two door in his garage that he figured would make the ultimate in drag machines. The two boys decided to concentrate on this one first, especially since Roger wasn't quite ready to go on his project. Anyway, they could only work on one rig at a time. The stock "high boy" was attacked and pulled apart right down to the frame.

To lower the frame, Connie discarded the stock front axle and substituted a three-inch dropped "Dago" that he had had chromed. A complete '40 Ford front brake layout was then built for the new axle. The stock Ford rear axle housing was opened up and the differential removed. A conversion to 4.44's was made and the differential action locked. The housings were

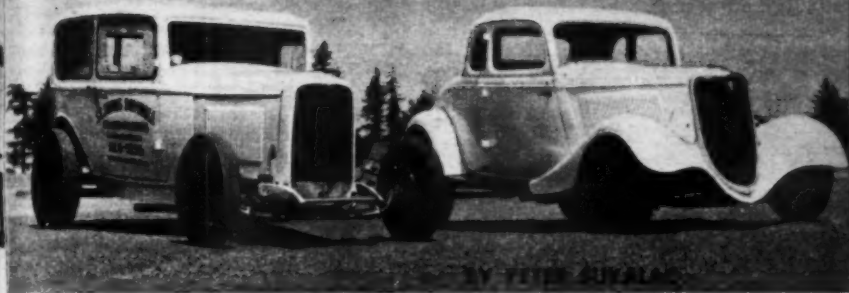
bolted up and mated to a pair of '40 Ford rear hydraulic brakes. The rear of the car was lowered by rebuilding the spring with flat leaves rather than by long shackles or the other more common practices. The '32 steering was then re-installed on the frame. New tube linkage was made up to fit the steering arm on the left backplate.

Connie also had his own ideas regarding the power plant for his competition machine. His engine was a 259-inch destroyer that had been built for him by Bud Parham. It featured a 3% bore with a 3% stroke, a Smith-Jones 284-2 cam, lightened crank (a Parham speciality), Offie 10:1 heads, Harmon-Collins mag, Navarro intake manifold, and homemade headers. The mill was mounted on the frame pads and coupled to a '41 Ford gear box.

With the little '32 in its final stages of construction the boys began to work on Roger's plan of attack. The car in his garage was a clean '33 Ford coupe. The boys followed the same procedure in tearing down this car. The rig was reduced to a parts pile, and then the chassis was built up first by the installation of a 3-inch dropped axle. The stock binders were stripped from the old front spindles and these were converted for brakeless mounting on



DOUBLE TROUBLE



BY TONY SUVALKA

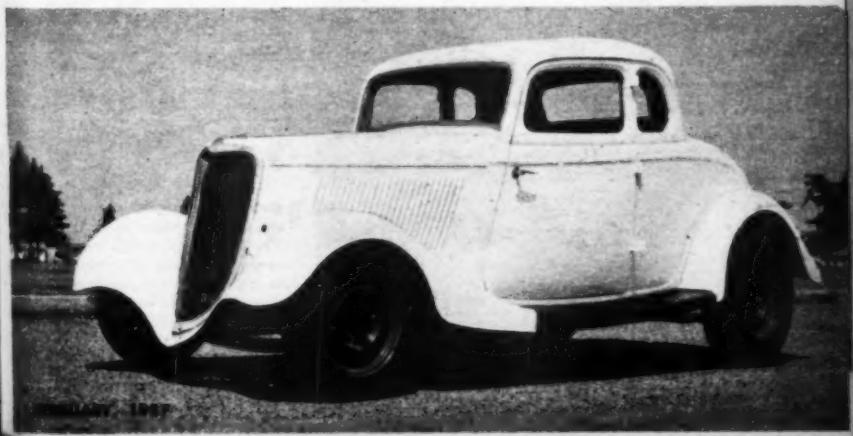
the new axle. A complete '40 Ford rear axle assembly replaced the stock layout, thus eliminating the usual brake changeover.

Two-inch tubing was used to make a pair of crossmembers that would act as mounts and also brace the frame. Rog's favorite mill, a 296-inch flatty, was dropped on the new mounts and the torque tube shortened. Roger chose the same final drive ratio as Connie—their one point of agreement—for 4.44's are hard to beat on the $\frac{1}{4}$ mile with a hard working flathead doing the chores.

The coupe body was worked over by the boys with cold chisels and metal shears in order to let it sit over the frame rails with the engine in its new

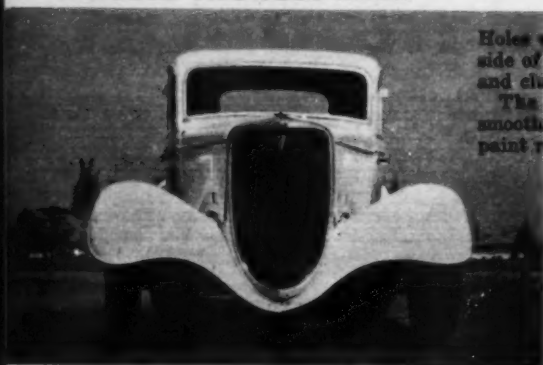
location. The firewall was removed completely and secured by metal screws to a tube framework which in turn was welded to the body sides. A hole was cut into the sheet metal directly in back of the carbs. A square of plexiglass was secured over the hole so the pots could be seen during warm-ups and shut-offs. When all the tailoring had been completed the boys bolted her down and started work on the steering. Rog had a '42 Willys steering column complete with box in his parts "room". This was converted into center steering and installed in the cab. An aircraft bucket was placed well back in the body—as far back as the top would allow, and secured there.

(continued)



JANUARY, 1967

DOUBLE TROUBLE continued



Holes were cut into the floor on either side of the transmission for the brake and clutch pedals.

The two cars were primed and smoothed before being shot in the paint room. Rog selected a light cream

Head on look at Simonatti's '33 reveals tasteful amount of chrome plating, bellies adage "if it don't go, chrome it". Coupe appears merely stock sans bumpers, but when starting flag dips the flat-head bellows and the five-window is out of the chute plenty fast.



Roger Simonatti steadies himself, awaits go sign. Engine's aft position has shoved Rog as far back as coupe's shape will allow. The steering is '42 Willys which has been converted to center control for balanced middle seating.



Coupe engine, like sedan's, is a flathead but has been built for brute torque rather than high rpm. Heads are Offy 10-1's, mag is Harman and Collins. A twenty pound flywheel delivers horses to the quarter-mile strip's asphalt.

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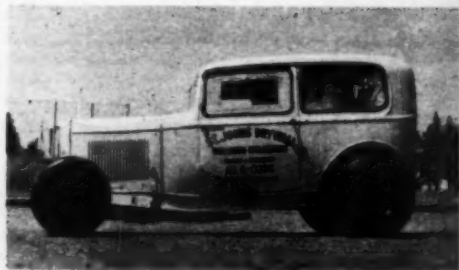
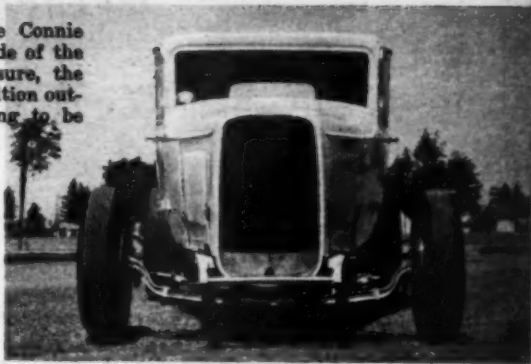
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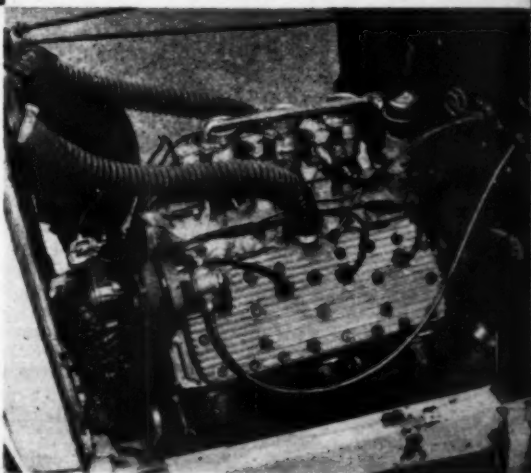
lacquer for his coupe, while Connie went for a much darker shade of the same stuff. One thing for sure, the cars were going to be competition outfits, but they were still going to be completely sanitary. ●

Head on shot of the Burley car is a view seldom seen by competitors, usually gets across finish line first. 1934 sedan looks docile enough, but low torque—high rpm V8 has nosed out even ohv competition. The 259-inch engine is a potent eighth-inch destroyer.



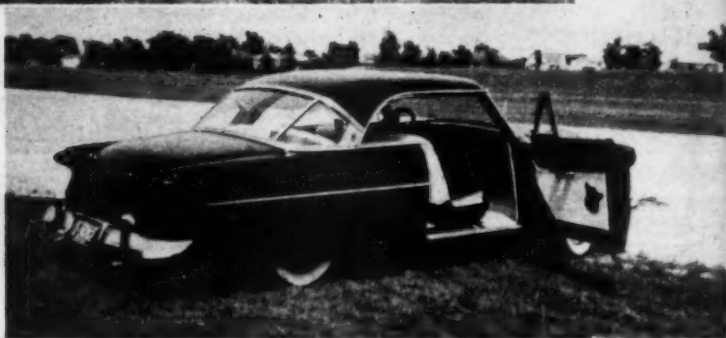
Connie Burley smiles smugly as he eyes his competition for what turned out to be another winning run. The sedan is one of few competition vehicles to carry a column shift. Note rugged safety belt securely anchored to frame.

Sedan engine has been shaved 'way aft for best rear tire bite out of chute. Forge-True pistons turn a lightened, destroyed Parham crank while king-size valves fluctuate through the action of a Clay Smith cam. Idle drives tach unit.



NEBRASKA

Out of the 48

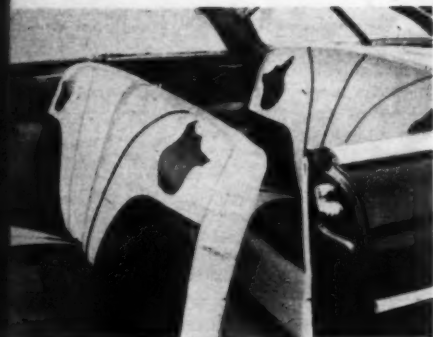


THE CAPITAL CITY of Lincoln offers this '52 "Vickie" as representative of custom progression in the Cornhusker State.

Joe Gutgsell began operations by switching grilles with a '53 Chevy, frenching the headlights and adding an updating peak just above. An Olds contributed the taillights but the skirts were handmade to fit flush in the rear fender cutouts. All hood and deck ornamentation has disappeared, as has the fender-mounted gas fill pipe; now situated within the trunk.

Startling black and white Naugahyde sets interior apart from stock.

Frank's Body Shop, in Lincoln, can take credit for the metal work and for the black lacquer job; the latter a definite hint that the custom body work is above reproach. ●





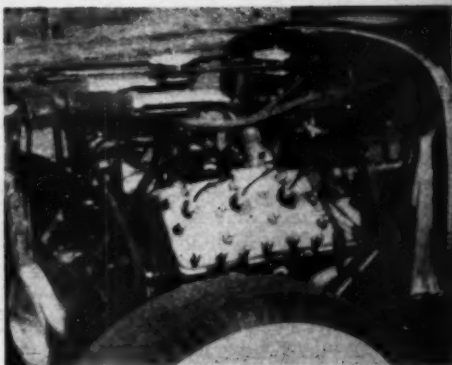
ARKANSAS



THE FACT that Ozark lacked street machinery prompted Bruce Sassamon to action. And because street rods are scarce, material from which to build them is plentiful, down Arkansas way. T's, A's, in fact all the more popular bodies are to be had for the asking, but it was a Deuce for Bruce.

During the restoration process, Bruce channeled the three-window the width of the frame and replaced the old twenty-one studder with a healthier 59A. Still not satisfied with the li'l Deuce's performance, he proceeded to bore, port and relieve the block, jack compression up to 10 to 1, stuff in a $\frac{1}{2}$ cam and set a couple of 97's above the dual intake manifold.

White wall tires set off the black paint job and cause nothing less than "oohs" from a wondering populace.



FEBRUARY, 1957

off the sketchpad

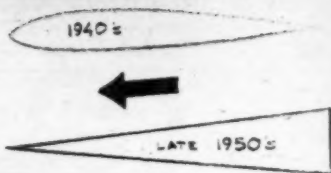
OVER THE past several years an evolution in auto design has transpired. A decade and a half ago, the mention of streamlining brought to mind a teardrop. The prominence of aircraft design during World War II and its familiarity to the public, gradually modified the teardrop thought into an elongated airfoil design. This shape, modified by the practical aspect of having to cover an engine, passengers, and a sometimes unreasonable amount of luggage space, found its way to deciding the form of the passenger automobile of the immediate post war period. Detroit machinery, though necessarily having a utilitarian box-like appearance, took on the soft curved corners of the big transports and bombers, giving rise to the remarks, "Looks like a lump of jello", or, "Hey, Bud, you tipped over your bathtub."

Air progress, spurred by the terrific advances of wartime, was plunging wildly on. The advent of jet and rocket propulsion, and consequential shattering of the sonic barrier, had drastic effect on the old concept of streamlined form. The needle nose, swept and delta wing designs, large exhaust ducts at the rear and knife-edged surfaces slowly changed the idea of a perfectly streamlined shape to that of a long thin wedge.

HOPPING UP THE FORD OHV's

(continued from p. 49)

off but rpms keep going up. This is where not much work is being done by the engine because the cylinders aren't being fully charged. Such is the case when the guy complains about many rpms, but no go. Uniformity in size of each lobe and exact duplication of contours are just a couple of more insurance policies for a top performing engine. It is extremely important in Ford engines because something ground, but not truly engineered for lift and spring load doesn't stand much of a chance of staying in, much less performing. Unfortunately, about 70% of the cam



The automotive industry continued in its plodding, methodical way, hesitant to go out on a limb with a radical changeover to keep pace with modern thinking. Many companies felt out the pulse of the buying public with dream cars, embodying prominent aero-styled features. The more accepted ones soon appeared in production and as time progresses others follow.

The wedge design has certain definite advantages to customizers and we'll point out how they can be adapted to certain cars. Trim and paint, properly applied will heighten the illusion, though body work is the only answer to some cases.



Here we see the basic wedge as adapted to auto design. Next month we'll discuss balancing the form. ●

grinds which are on the market at this time for Ford ohv engines are unsuitable. Use of contours and timing which worked well for some of the big deep-breathers which have been around for a few years is not the answer for making your Ford move out. A few conscientious grinders with years of know-how, the proper equipment and an engineering background have developed patterns which can make that Henry-built snarl. Get the facts before purchasing a dubious piece of equipment.

In the article on complete engine assembly coming up, we will show you the process of degreasing your cam and what to look for in lobe design. ●



ALTOGETHER TOO MANY of us lack the courage of our convictions when it comes to customizing. We hesitate to deviate from standard practices with the result of stereotyped Fords and Chevys, each resembling one belonging to a friend, or one from the pages of our favorite car magazine. Not so with reader Walt Schweizer of Philadelphia. Adaption of a suitable power plant and transmission, elimination of excessive geegaws and addition of complementary trim and paint to the normally ugly duckling-ish '48 Hudson is a refreshing departure from standard procedures. Hank & Bud's Custom Shop in Philly did the work according to Walt's direction. The engine is a '50 Olds Rocket with recent model components as carburetion, cam, etc., and modified heads with higher compression. The transmission is an Olds Hydra. The whole works was supported by welding an Olds cross member into the Hudson frame. Heavier springing gives good ride and handling despite the 200 lb. weight increase.

A '50 Merc grille, less center, fits well into the front shell, and Olds side molding separates the turquoise and cream lacquer paint job. Interior trim is rolled and pleated in turquoise and white.

The bumper exhaust is a combination of Kaiser guards and '55 Chevy cross bar with the pipes exiting through the tips of the dagmars. ●



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THE TRUCK DISPLAYED AT LAST



THE FIRST announcement of the appearance of Rod & Custom's pickup truck comes with notification that the 7th Annual National AUTORAMA in Hartford, Conn., will be held this year from February 20th through the 24th. The chopped, sectioned, radically reworked '50 Chevrolet ½-ton pickup, which has been displayed on these pages for the past three years as work progressed per readers requests, will be on hand as AUTORAMA opens its doors for its 7th annual showing. It is predicted that close to 100,000 persons, representing at least 27 states, will view the East's most colorful exposition.

This will be the first time that the workmanship of such California shops as Valley Custom, Barris Kustoms, Winfield, Chamberlain, Davis and Gates has been combined in a single vehicle. In addition to the nearly \$5,000 worth of body restyling, such

speed equipment specialists as Weber, Offenhauser, Cragar, Bell Auto Parts and Moon Automotive have combined to produce the 300 hp Chevy V8.

The three-toned, chrome bedecked hauler will be on display for the entire five day run of the show. And an attendant will be on hand during show hours to answer any and all queries concerning the truck's performance.

NOTE:

Promoters and directors of forthcoming Auto Shows during 1957 are invited to correspond with us concerning the availability of the Rod & Custom pickup truck for display. The truck will be available from March through October, and is offered on a non-competitive basis. As soon as your show dates have been confirmed, we suggest you contact us as requests for the truck's appearance are beginning to come in. ●

NEW HIGHWAY PERFORMANCE RECORD

THE NEWS that a new coast-to-coast highway performance record has been set did not come as much of a surprise to us. Driving the same '57 Ford that had earlier set 458 national and international records at Bonneville, Danny Eames and Chuck Daigh dashed from the Atlantic to the Pacific in 47 hours and 37 minutes under close observation by NASCAR officials.

What did surprise us, though, was the under-50-hours record. Last September R&C carried the first hint that such a run was in the offing by "one of the Big 3." Just to see what sort of an average could be set while obeying

existing traffic and speed regulations, we managed to push a standard shift '56 Olds 2,101 miles in 37 hours and 20 minutes — but we were hindered by having a lone driver without special assistance of any kind. Though we had crossed but ⅓rds of the U.S., we predicted that a coast to coast average in excess of 60 mph was a near impossibility — but Eames and Daigh covered their 2,913 miles with an hourly average of 61 mph. Our hats off to Ford for accomplishing the mark where a single breakdown — even for a mater of minutes — would have made the R&C prediction come true.



To produce a cheap but effective pedal tread, try this: Find an old file, flat or half round, approximately the width of the pedal needed. Grind notches at the points you want it severed, then snap it off in a vise (caution, watch for snap-back when it breaks off). Now trim the broken ends on a grinder and weld or braze it to the pedal shaft. If you have the facilities, heat the file to a cherry red and allow it to cool slowly in slaked lime or clean, dry sand. Thus annealed it may be sawed or drilled for mounting. Files thus treated may be used for a variety of purposes—including tools.

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Conducted by George Burnley

In certain instances it is necessary to find the exact size of a small hole in a casting for the purpose of inserting a pin or to tap for threads. Since the average home shop doesn't have a precision instrument for measuring less than a half-inch, it is necessary to resort to guesswork. To overcome such troubles, hammer or melt a short length of wire solder into a rough sphere about twice the diameter of the hole. Set the sphere over the hole and strike it sharply with a hammer a few times. Remove the solder and "mike" the end which had been in the hole.

The paint department can save much time and quite a few sanding discs in this manner: when rotary discs become "full" of sanded-off paint, run it over a steel brush clamped in a vise. This will remove the granules between the bits of abrasive.

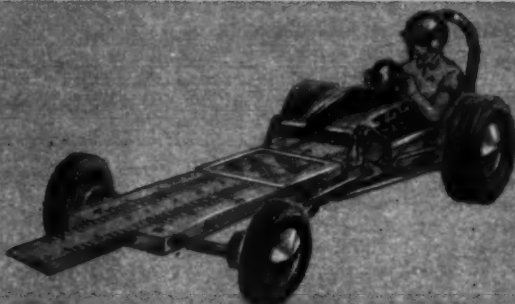
Again for the paint department, it becomes a tedious job masking off nameplates and radio aerales, or some such. The aeral can be licked by slipping a length of tubing or rubber hose over it, with a single piece of masking tape at the base to hold the tube and to give a sharp edge around the aeral base. Nameplates can be coated with grease before the car is sprayed. Upon completion, wipe off the grease and presto, bright chrome with no overspray. And speaking of overspray, such as often lands on glass or large chrome areas like on bumpers, etc., it can be easily removed by flooding the section with water and rubbing lightly with fine steel wool.

As an emergency or temporary means of repairing fuel or radiator tanks with minor punctures, run a sheet metal screw of appropriate size into the leak. The screw should pass through a washer of cork or other fibrous material which has been coated with a gummy, insoluble substance such as gasket compound.

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LOOKS LIKE the big, hairy Chrysler engine is finally getting ahold of the little Ford-Merc flathead on the top eliminator runs at drag meets 'round the country.

Remember the sensation a year ago when Cal Rice blew everybody off at the NHRA Championships at Phoenix with his tiny flathead Riley Special? The low-torque mill was getting away like a shot with scarcely a trace of burning rubber, leaving the big-inch boys like they were anchored; even though they were pulling on him like crazy at the finish. Rice got there first. His quick start was half the battle.

But there's another half to that battle — and apparently the overhead boys have learned how to fight it. Cal Rice is still cleaning up, but now he's behind a big blown Chrysler! Brute horsepower, and the accompanying acceleration, over the last half of the quarter more than made up for the fuzzier take-off. Rice's best e.t. dropped from last year's 10.30 secs to 9.99.

It looks like horsepower, *not* traction, has conclusively won the quarter-mile battle. Both the low e.t. of 9.99 and top speed of 159.01 are held by supercharged Chryslers developing between 500 and 600 hp. Looks like the flathead has been had.

I think the next logical step will be obvious from this year's performances; more development of the supercharging theme.

Let's take a quick look at the early days of drag racing. First it was the good old flathead, bored and stroked to around 300 cu. ins., that dominated both top speed and low e.t.s. These were putting out about 250 hp at 4500 rpm. Then the big overheads began to sneak in. Properly set up, 300 to 350 hp could be expected — so the flathead clan went to nitro and matched 'em.

At first the overhead devotees had trouble using the juice; they burned pistons, overheated, broke rods, cracked heads and got all fouled up in general. The Ford boys were blowing them off regularly. But gradually, with patience and a lot of midnight oil, the overhead boys began to get their engines to digest nitro — first 10% then more and more. Horsepower responded accordingly — 375, 400, 450. The flatheads were soon left far behind on top speeds as the marks crept over 145 mph. The low-torque flathead was doomed.

So now that we've about shot our bolt with nitro in the overheads, the next logical step is supercharging. Hot rodders have been playing with blowers on and off for about eight years, but we're really seeing only the first *serious* projects this year. It may be — I *hope* it is — the start of a new development era. ●

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